

Patent Claims

1. Handling facility at a seaport or inner harbor, especially for ISO containers, with a container terminal (1) arranged alongside a wharf, consisting of individual storage modules (8) arranged in rows, and at least one loading facility interacting with the storage modules (8) for the cargo handling to and from a ship (3) lying at the wharf, wherein at least one elevated stacking crane (7) per storage module (8) takes charge of the receiving, the horizontal transporting, and the stacking of the containers (17) and interacts with cross transporters (18) acting independently of each other and able to travel on a different horizontal level transverse to the individual storage modules (8), being responsible for the horizontal transporting of containers (17) between the storage modules (8), characterized in that a number of more than two cross transporters (18), depending on the size of the container terminal (1), can move on the same level beneath the transport level of the stacking cranes (7) and above the truck loading lanes (11.2 and 11.4) on at least one railway (21, 22) extending transversely to the storage modules (8) into the region of interim storage stations (16) assigned to each storage module (8), each of them being arranged sideways and parallel to the railway (21, 22) of the cross transporter (18) and forming interfaces between the stacking crane (7) and the cross transporters (18).
2. Handling facility per Claim 1, characterized in that each cross transporter (18) is outfitted with a transfer or receiving device for moving a container (17) from or to an interim storage station (16).
3. Handling facility per Claim 2, characterized in that the transfer or receiving device consists of a load carrier (18.2) for the container (17) that can shift or travel into the region of the interim storage station (16), transverse to the direction of travel of the cross transporter (18).
4. Handling facility per Claim 3, characterized in that the load carrier (18.2) is configured as a linear driven shunt cart, which can travel on railways (18.3) arranged on the cross transporter (18).
5. Handling facility per Claims 1 to 4, characterized in that the interim storage stations (16), configured as angle brackets, reach at least partially freely across the railway (21, 22) and the cross transporter (18) so that the load carrier (18.2) can travel underneath the interim storage station (16) when the cross transporter (18) is positioned underneath the interim storage station (16), while sideways running open slots (16.1) are provided in the horizontal part of the angle bracket in the direction of the load carrier (18.2), which are engaged by vertical lifting devices for the container (17), arranged on the load carrier (18.2) and reaching underneath the support points of the container (17).
6. Handling facility per Claim 5, characterized in that the vertical lifting devices of the load carrier (18.2) are configured as hydraulic piston and cylinder units.
7. Handling facility according to one of Claims 1 to 6, characterized in that two railways (21, 22) running parallel to each other traverse the container terminal (1) transverse to the storage modules (8), being joined together at the head end by change-over devices (19, 20) for the cross transporter (18), in order to enable a switching of the cross

transporter (18) from one of the railways (21 or 22) to the other parallel railway (22 or 21).

8. Handling facility according to one of Claims 1 to 7, characterized in that the driving lanes (11.1, 11.3) for the trucks (9) travel underneath the railways (21, 22).
9. Handling facility according to one of Claims 1 to 8, characterized in that the loading lanes (11.2, 11.4) for the trucks (9) travel underneath alongside the interim storage stations (16).
10. Handling facility per Claim 7, characterized in that the cross transporters (18) are timed to travel in a particular direction of turning (24) on the parallel running railways (21, 22) and the change-over devices (19, 20) at the head end.
11. Handling facility per Claim 7, characterized in that the change-over devices (19, 20) each consist of a bridgelike steel structure with lengthwise running railways (23), whose gauges correspond to those of the railways (21, 22) for the cross transporters (18), and they are provided with rail travel mechanisms at the front end, which can travel on railways (23) between the two railways (21, 22) of the cross transporters (18) that are elevated at the head end transverse to the railways (21, 22) of the cross transporters (18) and move into end positions in which the railways on the bridgelike steel structure are aligned with one of the railways (21, 22) for the cross transporter.
12. Handling facility according to one of Claims 1 to 7, characterized in that the interim storage stations (16) are fastened by the vertical legs of the angle brackets to the side of the girders for the railways (21, 22) and are configured to accommodate up to four containers (17) per storage module (8).